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EXAMINER				
ZHENG, LOIS L				
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1793				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jami@setterroche.com
sarah@setterroche.com

Office Action Summary

Application No.

10/566,059

Applicant(s)

FLEISCHANDERL ET AL.

Examiner

LOIS ZHENG

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2009.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
4a) Of the above claim(s) 27-41 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-26 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SI/22)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Status of Claims

1. Claim 1 is amended in view of applicant's response filed 28 October 2009. Claims 27-41 remain withdrawn from consideration. Therefore, claims 1-26 are currently under examination.

Status of Previous Rejections

2. The rejection of claim 1 under 35 U.S.C. 112, second paragraph, is withdrawn in view of applicant's claim amendment filed 28 October 2009.
3. The rejection of claims 1-3, 10 and 16-18 under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as being obvious over WO2001/088216, whose corresponding English equivalent is Zeizinger et al. US 2003/0155048 A1(Zeizinger), is withdrawn in view of applicant's persuasive argument regarding Zeizinger filed 28 October 2009.
4. The rejection of claims 11-15 under 35 U.S.C. 103(a) as being unpatentable over Zeizinger is withdrawn in view of applicant's persuasive argument regarding Zeizinger filed 28 October 2009.
5. The rejection of claims 4-9 under 35 U.S.C. 103(a) as being unpatentable over Zeizinger, in view of Arezzo et al. US 6,335,053 B1(Arezzo), is withdrawn in view of applicant's persuasive argument regarding Zeizinger filed 28 October 2009.
6. The rejection of claims 19 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zeizinger, in view of applicant's admitted prior art, is withdrawn in view of applicant's persuasive argument regarding Zeizinger filed 28 October 2009.

7. The rejection of claim 20 under 35 U.S.C. 103(a) as being unpatentable over Zeizinger, and further in view of Gegner US 2003/0193120 A1(Gegner), is withdrawn in view of applicant's persuasive argument regarding Zeizinger filed 28 October 2009.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-4, 8, 10-14 and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 03/035922, whose English equivalent is Imai et al. US 2004/0166360 A1(Imai).

Imai teaches a process to form a hardened steel sheet for hot-press forming, comprising coating the metal surface with a zinc based plating layer, heating the coated substrate in an oxygenizing atmosphere(i.e. admission of atmospheric oxygen), wherein an oxide layer is formed on the surface of zinc plated steel sheet and diffusion of Zn and Fe metals occurs during the heating process(abstract, paragraphs [0052, 0077-0079, 0107-0110]). Imai further teaches that zinc alloys such as zinc-5% aluminum can be used as the coating material (paragraphs [0057-0059]). Fig. 1 of Imai further shows subsequent cooling at a rate of 20°C/sec.

Regarding claims 1-2, 8 and 10, Imai teaches forming the hardenable steel alloy into a steel sheet(paragraphs [0101-0106]).

Regarding claims 3-4, Imai further teaches coating by claimed hot dipping or electrolytic deposition (paragraphs [0054-0055, 0108]).

Regarding claims 11-14, since Imai teaches the same coating process as claimed and the zinc alloy coating also includes aluminum as claimed, the examiner concludes that the ZnO oxide layer as taught by Imai formed on the surface of the zinc based coating of Imai would have inherently comprises oxide of aluminum (i.e. high oxygen affinity elements). In addition, since zinc and iron diffusion takes place during the annealing step as taught by Imai, the examiner concludes that the zinc based coating of Imai would have inherently comprised a Zn-Fe alloy layer wherein the Fe content decreases towards the surface of the coating layer and Zn content increases towards the surface of the coating layer. Therefore, the Zn based coating layer as taught by Mai inherently contains an iron-rich phase (i.e. alloying phase closest to the steel substrate) and a zinc rich phase (i.e. alloying phase towards the surface of the Zn alloy coating layer), and parts of these iron-rich and zinc-rich phases would inherently contain the claimed Zn to Fe ratios. The top surface of the Zn alloy coating layer as taught by Imai would have inherently has a zinc content of $\geq 90\%$.

Regarding claims 16-17, Imai further teaches the claimed zinc alloy bath temperature of 460°C (Fig. 1).

Regarding claim 18, Imai further teaches the claimed inductive heating (paragraph [0054]).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imai.

The teachings of Imai are discussed in paragraph 9 above. However, Imai does not explicitly teach the coating thickness.

Regarding claim 15, since coating thickness effects coating's ability to inhibit cathodic corrosion (i.e. the thicker coating, the longer protection) and the coating thickness can be varied by changing coating time and heat treatment duration, one of ordinary skill in the art would have found it obvious to have varied the coating thickness by varying coating time via routine optimization in the process of Imai in order to achieve desired coating thickness to produce desired level of cathodic protective action as claimed.

12. Claims 5-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai, in view of Arezzo et al. US 6,335,053 B1(Arezzo).

The teachings of Imai are discussed in paragraphs 9 above. However, Imai does not explicitly teach the claimed two step coating process as recited in claims 5-7 and the claimed amount of high oxygen affinity elements as recited in claim 9.

Arezzo teaches traditional zinc alloy coating methods including hot dipping or electrodeposition(col. 1 lines 19-21). Arezzo further teaches a two-step Zn alloy coating

process wherein a zinc layer is first deposited to a metal surface by PVD, or electro-deposition, or hot dipping, followed by deposition of the alloying elements such as Al in an amount of 0.2-3%(abstract, col. 3 lines 6-12 and 25-27, Example 1). The deposition of the alloying element can be done via vaporization(col. 3 lines 1-3).

Regarding claims 5-7 and 9, it would have been obvious to one of ordinary skill in the art to have incorporated the two-step Zn alloy coating process, including deposition of alloying element such as Al in the amount of 0.2-3%, as taught by Arezzo into the coating process of Imai in order to produce a Zn alloy coating with improved corrosion resistance, weldability, ductility and adhesion features as taught by Arezzo(abstract, col. 2 lines 23-29).

13. Claims 19 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai, in view of applicant's admitted prior art.

The teachings of Imai are discussed in paragraph 9 above. However, Imai does not explicitly teach the claimed forming using a die during heating or cooling.

Paragraph [0018] of the instant specification admits that forming steel parts and simultaneously harden them in a single step is well known in the art, wherein a steel sheet is heated to a temperature above austenitization temperature, and then formed in a cold die which hardens the steel sheet by rapidly cooling it.

Regarding claims 19 and 21-26, one of ordinary skill in the art would have found it obvious to have incorporated the simultaneous formation of steel parts in a die and hardening as admitted by the applicant into the inductive heating and the subsequent

cooling steps in the process of Imai with expected success and with the advantage of reduced processing time.

14. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imai, and further in view of Gegner US 2003/0193120 A1(Gegner).

The teachings of Imai are discussed in paragraph 9 above. However, Imai does not explicitly teach the claimed radiation furnace.

Gegner teaches a hardening process via heat treating a metal(abstract). Gegner further teaches that radiation or inductive heating can both be used for the heat treatment(paragraph [0022]).

Therefore, it would have been obvious to one of ordinary skill in the art to have substituted the inductive furnace with a radiation furnace in the process of Imai with expectation of success since Gegner teaches that inductive heating and radiation heating are functionally equivalent.

Double Patenting

15. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

16. Claims 1-26 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of copending US Patent Application No. 10/566,219. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-14 of copending US Patent Application No. 10/566,219 teaches a steel hardening process that comprises substantially the same galvanization, heating and cooling steps incorporating the same types and the same amount of high oxygen affinity elements.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

17. Claims 1-26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 8-28 of copending Application No. 10/566069. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1, 3, 8-28 of copending Application No. 10/566069 teaches a steel hardening process that comprises substantially the same galvanization, heating and cooling steps incorporating the same types and the same amount of high oxygen affinity elements.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

18. Applicant's arguments regarding the Imai reference, filed 28 October 2009, have been fully considered but they are not persuasive.

In the remarks, applicant argues that Imai does not teach a skin of oxide of an oxygen affinity element like aluminum because Imai only teaches a ZnO layer on the surface of the plated layer.

The examiner does not find applicant's argument persuasive because the instant claim 1 recites "a superficial skin ***comprising*** an oxide of the high oxygen affinity element", not "a skin of oxide of an oxygen affinity element like aluminum". By using the word "comprising", the scope of instant claims only requires the claimed oxide skin to have at least some oxide of a high oxygen affinity element. The scope of the instant claims does not require an oxide skin made of entirely oxide of a high oxygen affinity element like aluminum.

Imai teaches that the zinc plated layer can be either zinc or zinc alloy and suitable zinc alloy includes an alloy with 5% aluminum(see paragraph 9 above). Undergoing the hardening process as taught by Imai, the ZnO layer formed on the zinc plated layer would have inherently contained at least some amount of aluminum oxide. Therefore, the aluminum oxide containing ZnO layer as taught by Imai reads on the claimed "superficial skin ***comprising*** an oxide of the high oxygen affinity element".

Applicant further argues that Imai prefers heating or annealing a pure zinc plated layer.

The examiner does not find applicant's argument persuasive because heating or annealing a pure zinc plated layer is only a preferred embodiment of Imai, therefore, does not in anyway limit the scope of the Imai's invention.

Applicant further argues that Imai teaches to oxidize the zinc layer while the instant invention teaches the zinc layer is protected from oxidation.

The examiner does not find applicant's argument convincing because Imai's oxide layer is formed on top of the zinc or zinc alloy (including Zn-5%Al Alloy) plated layer(abstract). Therefore, the underlying zinc or zinc alloy plated layer is protected from oxidation from the aluminum oxide containing ZnO layer formed in the process of Imai.

Applicant further argues that Imai does not disclose the presence of an iron rich phase and a zinc rich phase.

The examiner does not find applicant's argument persuasive. As set forth in paragraph 9 above, zinc and iron diffusion inherently takes place during the annealing step as taught by Imai. Therefore, the zinc based coating of Imai would have inherently comprised a Zn-Fe alloy layer wherein the Fe content decreases towards the surface of the coating layer and Zn content increases towards the surface of the coating layer. In other words, the Zn based coating layer as taught by Mai inherently contains an iron-rich phase(i.e. alloying phase closest to the steel substrate) and a zinc rich phase(i.e. alloying phase towards the surface of the Zn alloy coating layer).

Applicant further argues that there is no motivation to combine the teachings of Imai and Arezzo because Arezzo does not pertain to hardenable steel.

The examiner does not find applicant's argument convincing because claims 5-7 pertain to the deposition of the zinc coating layer and Arezzo is concerned with a zinc or zinc alloy coating layer deposition. Arezzo further teaches a two-step Zn alloy coating process, using aluminum as alloying element, produces a Zn alloy coating with improved corrosion resistance, weldability, ductility and adhesion features as taught by Arezzo(see paragraph 12 above), which provides proper motivation for the incorporation of Arezzo's two-step Zn alloy coating process into the zinc alloy coating step in the process of Imai.

Applicant's arguments regarding Imai in view of applicant's admitted prior art and Imai in view of Gegner are not persuasive because they are based on the same arguments against Imai which are also not persuasive.

Applicant's arguments regarding the double patenting rejections are not persuasive because the rejections based on Imai have been maintained.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOIS ZHENG whose telephone number is (571)272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art
Unit 1793

LLZ